

Claim Amendments

Claims 1-21 (Canceled)

22. (New) A process meter for measuring at least one physical process variable of a medium stored in a process container or flowing in a process line, comprising:

a transducer including a sensor arrangement providing measurement signals (s_1, s_2), said sensor arrangement having: at least a first sensor providing at least a first measurement signal (s_1) in response to the physical process variable being measured, particularly to changes in the process variable, and at least a first temperature sensor mounted in said transducer for locally sensing a first temperature, T_1 , in the transducer, and by means of said at least one temperature sensor, at least a first temperature measurement signal (Θ_1) representing the first temperature, T_1 , in said transducer; and

meter electronics which, using at least said first measurement signal (s_1) and a first correction value (K_1) for the at least first measurement signal (s_1), derive at least one measured value (X) currently representing the physical variable, wherein:

during operation, said meter electronics determine the first correction value (K_1) from a temporal variation of the at least first temperature measurement signal (Θ_1) by also taking into account temperature values sensed in the past by means of said first temperature sensor.

23. (New) The process meter as defined in claim 22, wherein:

during operation, said meter electronics respond to a change in the first temperature

measurement signal (Θ_1), corresponding to a change in the first temperature, with a change in the first correction value (K_1) after a time delay.

24. (New) The process meter as defined in claim 22, wherein:

said sensor arrangement further has at least a second temperature sensor mounted in said transducer, particularly in spaced relationship from said first temperature sensor, for locally sensing a second second temperature, T_2 , in said transducer, and wherein:

by means of said second temperature sensor, said sensor arrangement provides at least a second temperature measurement signal (Θ_2), representing the second temperature, T_2 .

25. (New) The process meter defined in claim 24, wherein:

said meter electronics determine the first correction value (K_1) by also using the second temperature measurement signal (Θ_2).

26. (New) The process meter as defined in claim 24, wherein:

said meter electronics determine a second correction value (K_2) from a temporal variation of at least the second temperature measurement signal (Θ_2); and

said meter electronics derive the measured value (X) by also using the second correction value (K_2).

27. (New) The process meter as defined in claim 22, wherein:

said meter electronics comprise a filter stage (FS) for deriving the at least first correction

value (K_1), with the first temperature measurement signal (Θ_1) being applied to a first signal input of said filter stage (FS).

28. (New) The process meter as defined in claim 27, wherein:

said filter stage (FS) comprises a first A/D converter (AD_1) for converting the first temperature measurement signal (Θ_1) to a first digital signal (Θ_{1D}).

29. (New) The process meter as claimed in claim 28, wherein:

said filter stage comprises a first digital signal filter (SF_{1D}) for the first digital signal (Θ_{1D}).

30. (New) The process meter as defined in claim 29, wherein:

said first digital signal filter (SF_{1D}) is a recursive filter.

31. (New) The process meter as defined in claim 29, wherein:

said first digital signal filter is a nonrecursive filter.

32. (New) The process meter as defined in claim 26, wherein:

said filter stage (FS) also serves to derive the second correction value (K_2), in which case the second temperature measurement signal (Θ_2) is applied to a second signal input of said filter stage (FS); and

said filter stage (FS) comprises a second A/D converter (AD_2) for converting the second

temperature measurement signal (Θ_2) to a second digital signal (Θ_{2D}).

33. (New) The process meter as defined in claim 27, wherein:

said filter stage comprises a second digital signal filter for the second digital signal (Θ_{2D}).

34. (New) The process meter as defined in claim 22, wherein:

said transducer comprises at least one flow tube for conducting the flowing medium.

35. (New) The process meter as defined in claim 34, wherein:

at least one of said two temperature sensors is mounted on said flow tube or in the vicinity thereof.

36. (New) The process meter as defined in claim 34, wherein:

said transducer comprises a transducer case enclosing said flow tube.

37. (New) The process meter as defined in claim 36, wherein:

at least one of said temperature sensors is fixed to said transducer case or positioned at least in the vicinity thereof.

38. (New) The process meter as defined in claim 34, wherein:

said transducer further comprises a electrodynamic electromagnetic vibration exciter electrically connected to said meter electronics for driving said flow tube; and

said meter electronics provide at least one excitation signal (i_{exc}) for controlling said vibration exciter, so that in operation, said flow tube is vibrated at least intermittently.

39. (New) The process meter as defined in claim 38, wherein:

said first sensor responds to vibrations of said flow tube, particularly to inlet-side or outlet-side vibrations; and

the measurement signal (s_1) provided by said first sensor represents mechanical vibrations of said vibrating flow tube which are influenced by the process medium.

40. (New) The process meter as defined in claim 38, wherein:

said transducer comprises a supporting element fixed to said flow tube, particularly a supporting element mounted in said transducer case so as to be capable of vibratory motion, for supporting said vibration exciter and at least said first sensor.

41. (New) The process meter as defined in claim 40, wherein:

at least said first temperature sensor is fixed to said supporting element or positioned at least in the vicinity thereof.

42. (New) The process meter as defined in claim 22, wherein:

said sensor arrangement comprises at least a second sensor for providing at least a second measurement signal (s_2) in response to the physical process variable; and

said meter electronics derive the measured value by also using the second measurement

signal.

43. (New) The process meter as defined in claim 22, wherein:

said meter is one of: a mass flow rate meter, a density meter, a viscosity meter, a pressure meter, or the like.